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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/579,868

05/18/2006

Tsuyoshi Matsumoto

MAT-8847US

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RATNERPRESTIA

P.O. BOX 980

VALLEY FORGE, PA 19482

EXAMINER

COMLEY, ALEXANDER BRYANT

ART UNIT

PAPER NUMBER

3746

MAIL DATE

DELIVERY MODE

06/03/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/579,868	<b>Applicant(s)</b> MATSUMOTO ET AL.	
	<b>Examiner</b> ALEXANDER B. COMLEY	<b>Art Unit</b> 3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 08 December 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

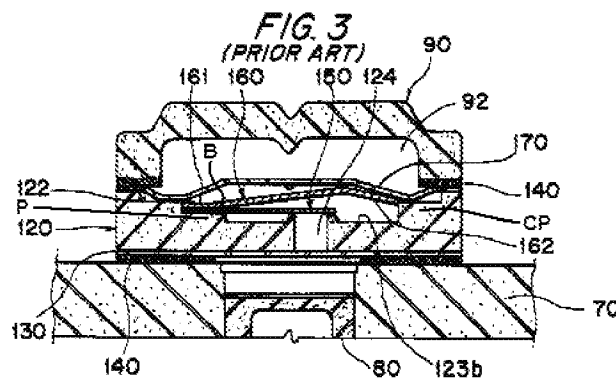
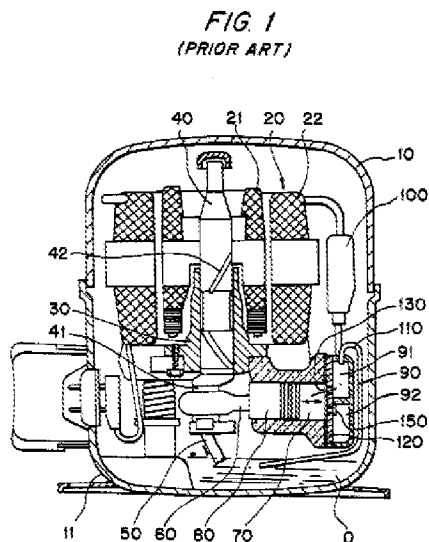
### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. **Claims 1-6** are rejected under 35 U.S.C. 102(b) as being anticipated by United States Patent No. 5,769,126 to Cho directed to a Discharge Valve Assembly in a Reciprocating Compressor.



In regards to Independent **Claims 1 and 5**, and with particular reference to Figures 1 and 3 shown above, Cho discloses:

(1) A hermetic compressor (Fig. 1) comprising a hermetic container (10) that accommodates a compressing element and oil, the compressing element

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comprising: a cylinder (70); a piston (80) reciprocating in the cylinder; and a valve plate (120) that seals an opening end of the cylinder and has a discharge valve system (150) at the outer side of the cylinder; the discharge valve system comprising: a discharge hole (124) formed in the valve plate; a valve seat (see Fig. 3) provided on the outer side of the valve plate around the discharge hole; a pedestal (P) formed substantially in the same height as the valve seat on the outer side of the valve plate; a plate contact portion (CP) formed at a position higher than the valve seat on the outer side of the valve plate; a discharge reed (150) made of a plate spring material and including an opening/closing portion covering the discharge hole in a way capable of opening and closing thereof and a discharge reed holding portion (see Fig. 3) fixed to the pedestal; a spring reed (160) made of a plate spring material, which includes a spring reed holding portion fixed to the pedestal (see Fig. 3) and a movable portion (162) and is provided at the outer side of the discharge reed; and a stopper (170) including a stopper holding portion fixed to the pedestal and a regulation portion and is provided at the outer side of the spring reed; wherein the spring reed has a spring reed bending portion (B) and a tip portion (162) in the movable portion, the spring reed is bent toward a direction of the valve seat at the spring reed bending portion, and the tip portion is brought into contact with the plate contact portion.

**(5)** A hermetic compressor (Fig. 1) comprising: a cylinder (70); a piston (80) reciprocating in the cylinder; and a valve plate (120) that seals an opening end of

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the cylinder and has a discharge valve system at the outer side of the cylinder; the discharge valve system (150) comprising: a valve seat (see Fig. 3) provided on the outer side of the valve plate around a hole (124) penetrating through the valve plate; a pedestal (P) formed in the same height as the valve seat on the outer side of the valve plate; a plate contact portion (CP) formed at a higher position than the valve seat on the outer side of the valve plate; a first plate spring (150) fixed to the pedestal at one end and being capable of covering the hole at another end; a second plate spring (160) provided at the outer side of the first plate spring, fixed to the pedestal at one end and reaching the plate contact portion at another end, and bent toward the direction of the valve seat in a middle portion (B); and a stopper (170) fixed to the pedestal at one end and covering the second plate spring.

As shown in Figures 1 and 3 pictured above, Cho discloses a prior art reciprocating compressor unit (Fig. 1) that utilizes a special discharge valve setup (Fig. 3) designed to provide more efficient discharge operation. Cho's compressor is driven by a motor unit 20, which in turn drives a rotating compressing unit comprised of an eccentric 41 and piston 80. In particular, Cho states "A conventional enclosed reciprocating compressor includes, as illustrated in FIG. 1, driving means 20 having a rotor 21 and a stator 22 disposed at an upper side in an upper and a lower case 10 and 11, a crank axis 40 having an eccentric unit 41 disposed at an inner lower side of the rotor 21 through the medium of a bearing 30 and an oil pickup tube 50 disposed at a

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lower end of the eccentric unit 41 for being eccentrically moved by turning effect of a crank shaft 40 and for picking up oil (o) stored at a lower side in a lower case 11 to thereby supply the oil to the eccentric unit 41 and a spiral groove 42 formed at the crank shaft 40.” (Col. 1, Lines 11-21) Cho goes on to say “The connecting rod 60 is disposed at a tip end thereof with a piston 80 for moving horizontally and reciprocally in a cylinder block 70 mounted at one side in the lower case 11. The cylinder block 70 is arranged at one side thereof with a cylinder head 90 having suction and discharge chambers 91 and 92 for high pressurized gas to be sucked in and discharged there through.” (Col. 1, Lines 27-33) Most importantly, however, is the structure of the discharge valve seen in Figure 3 of the prior art compressor. As shown in Figure 3, a discharge hole 124 with a valve seat is disposed through a valve plate 120. A pedestal (P) that is equal in height to the valve seat supports a discharge valve 150 (i.e. discharge reed), stopper valve 160 (i.e. spring reed), and keeper member 170 (i.e. stopper) on the left end of the valve plate, while a plate contact portion (CP) that sits taller than the valve seat supports the stopper valve 160 and keeper member 170 on the left side of the valve plate. To begin, Cho states “At this time, the valve plate 120 is concavely formed at an upper center area thereof with a first accommodation unit 122 for accommodating a keeper member 170 to accurately place a discharge valve 150 and a stopper valve 160 at a predetermined position.” (Col. 1, Lines 54-58) A bent portion (B) in the stopper valve 160 can be seen bent towards a direction of the valve seat, while the tip portion of the stopper valve 160 can be seen brought into contact with the plate contact portion (CP). Cho finishes by describing the operation of the discharge valve by disclosing

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“Furthermore, the valve movement unit 152 of the discharge valve 150 which has blocked the discharge hole 124 is laid aside by pressure of the compressed high-pressured gas to thereby hit the valve movement unit 162 of the stopper valve 160, and the stopper valve 160 is retracted by the impact thereof until same reaches the keeper member 170, whereby the high-pressurized gas in the cylinder block 70 is discharged to the discharge chamber 92 of the cylinder head 90 through the discharge hole 124 of the valve plate 120. When the discharge of high-pressurized gas is finished and the piston 80 is moved to a bottom dead center the valve movement unit 152 of the discharge valve 150 is returned to the original position by the resilient force of the stopper valve 160 and the restoring force of the discharge valve 150, thereby contacting the discharge hole 124 of the valve plate 120 and the hole 124.” (Col. 2, Lines 32-58)

3. In regards to dependent **Claim 2**, the discharge valve 150 (i.e. discharge reed) bends between the left-end holding portion and the freely moving right end tip portion of the valve, thereby forming a bent portion in between that is bent toward a direction of the valve seat. Regarding dependent **Claims 3 & 6**, it can be seen in Figures 2 & 3 that a concave portion lower in height than both the valve seat and pedestal is formed between the valve seat and the pedestal on the valve plate (See Fig. 3). And finally, in regards to dependent **Claim 4**, the keeper member 170 (i.e. stopper) is shown with a stopper contacting portion that is bent towards the stopper valve 160 (i.e. spring reed) (See. Fig. 3).

### ***Conclusion***

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following selected patents and technical literature is cited to further show the state of the art in discharge valve structures and related technology in general where the not all obvious salient features of the patents are disclosed as follows:

- US Patent Nos. 5,178,183, 5,601,118, and 5,887,622 each disclose a compressor discharge valve structure similar to that of Applicant's claimed discharge valve

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEXANDER B. COMLEY whose telephone number is (571)270-3772. The examiner can normally be reached on M-F 7:30am - 5:00am EST (Alternate Fridays Off). If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon C. Kramer can be reached on (571)-272-7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should



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you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Alexander B Comley/  
Examiner, Art Unit 3746

/Devon C Kramer/  
Supervisory Patent Examiner, Art  
Unit 3746

ABC